Twelve Born Alive: It's not all hugs and kisses

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30 Pigs per Sow per Year
Why 30 PSY - Sow farm economics 101

- Fixed costs over time
  - Labor, facilities, waste hauling, G/A
  - $340/sow space per year
- Fixed costs per sow
  - Feed, vet med, replacements
  - $270/sow per year
- Total cost of $610

- Effect of productivity
  - 20 psy = $30.50
  - 22 psy = $27.75
  - 24 psy = $25.40
  - 26 psy = $23.50
  - 28 psy = $21.80
  - 30 psy = $20.25

1 pig is about $1.00

All $ in USD

Why 30 PSY - but I can’t handle the pigs….

- “Large US” system
  - Space not fixed
  - ↑pigs = ↓weaned pig cost
  - ↑pigs ≠ WTM economic change
    - Each pig has full margin over variable cost value

- Fixed space system
  - ↑pigs → change in WTM economics so…
  - ↓sow inventory with = pigs → ↓cost = ↑profit
    - Capture sow associated cost savings = $0.44 per ↑1 psy
A little math

- A sow can have 2.45-2.5 litters per sow per year
- 30 pigs / 2.5 litter = 12 pigs/litter
- 12 pigs weaned ≠ 12 born alive

High PSY =
Lots of Pigs Born Alive =
New Management Challenges
Opportunity: 30 PSY is Real!

<table>
<thead>
<tr>
<th>Farm</th>
<th>Farm A</th>
<th>Farm B</th>
<th>Farm C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number sows</td>
<td>1100</td>
<td>700</td>
<td>530</td>
</tr>
<tr>
<td>Total Born</td>
<td>15.7</td>
<td>14.9</td>
<td>15.6</td>
</tr>
<tr>
<td>Born Alive</td>
<td>13.7</td>
<td>13.7</td>
<td>13.7</td>
</tr>
<tr>
<td>Weaned /litter</td>
<td>13</td>
<td>11.3</td>
<td>11.7</td>
</tr>
<tr>
<td>Survival of TB</td>
<td>82.8%</td>
<td>75.8%</td>
<td>75.0%</td>
</tr>
<tr>
<td>Farrowing Rate</td>
<td>93%</td>
<td>79%</td>
<td>91%</td>
</tr>
<tr>
<td>Lactation Length (d)</td>
<td>29.7</td>
<td>29</td>
<td>30</td>
</tr>
<tr>
<td>L/S/A</td>
<td>2.36</td>
<td>2.27</td>
<td>2.32</td>
</tr>
<tr>
<td>PSY (w/ gilts)</td>
<td>28.27</td>
<td>25.6</td>
<td>27.2</td>
</tr>
</tbody>
</table>

Danish Farm’s, Q2, 2006; JFL

OK, “I got lot o’ pigs” now what?

- The real world has constraints:
  - Labor, sows, buildings, Sunday, deer season, etc
- Genetics are a big deal!
  - Total born, total born, total born
  - Temperament, pig size/variation
- Health is pretty important
- MANAGEMENT IS A BIGGER DEAL
The TMI extra special high corporate secrets to raising pigs

- We are not building rock ships here!
- It's all about blocking and tackling!
- Food, water and a dry place to sleep

How to WE get there?

Pig (Genetic Potential) → Production (Expression of Genetic Potential)

Changes in behavior responding to farm output

Pigs response To its environment

Production Practices

People (Management)
What happens in the real world?

Inconsistent implementation of practices

People (Management)

Practices are changed on farm

Review implementation

Pig (Genetic Potential)

Production (Expression of Genetic Potential)

Lower than expected output

Improve consistency

Improved output

Those of us in the room today are in the people business, we just happen to work with pigs!

Most business failures are NOT that the PLAN WAS BAD But that the PLAN WAS NOT EXECUTED

"Execution", Bossidy and Charan, 2002
What do we talk about every day?

- Don’t do more harm than good - you are not a sow, let her do her job
- Feed her, feed her, feed her!!!!!! (and don’t forget the water!)
- Hey that thing on the wall with the “red numbers” and those holes in the ceiling - don’t forget them.

The Production Circle

- Farrowing
- Breeding
- Weaning
- Lactation
- Fetal Development
- Gestation
- Protein Gain
- Ovulation
- Preweaning Mortality
- Ovarian Activity
- Protein Loss
- Egg Development

Feed Intake

- Low
- High
- Low
- High
- Low
Lactation Feeding Starts in Gestation

- Optimum body weight at farrowing (420 lb)
  - Predisposed for feed intake
- Significant protein deposition in late gestation
  - 2x increase in conceptus growth
  - 3x increase in mammary development
- Energy intake increase or fat is mobilized
- Protein requirement met or body tissue mobilized

Transition from Gestation to Farrowing

- Supporting **Optimal** Feed Intake
  - Room Temperature (68°F)
  - Water Accessible (> 0.5 gallon/minute)
  - Multiple Feedings (twice)
  - Feed kept fresh
- **Optimal** Feed Intake for **Three** Days Prior to Farrowing
  - 4 lb of feed/day (2 lb/feeding)
  - Avoid significant catabolic state
  - Avoid glucose loading
Effect of Lactation Feeding Frequency and volume on Sow and Litter Performance

- Treatment 1: Scaled early feeding program according to unit protocol.
- Treatment 2: Sows fed four times per day to appetite.
- Treatment 3: Sows fed twice per day to appetite.

Results – Study #1

<table>
<thead>
<tr>
<th>Item</th>
<th>Trt 1</th>
<th>Trt 2</th>
<th>Trt 3</th>
<th>SEM</th>
<th>Sig.¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of sows</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>BW at entry (lbs)</td>
<td>490.4</td>
<td>494.9</td>
<td>490.9</td>
<td>3.57</td>
<td>NS</td>
</tr>
<tr>
<td>BW at weaning (lbs)</td>
<td>420.8</td>
<td>421.3</td>
<td>414.2</td>
<td>4.88</td>
<td>NS</td>
</tr>
<tr>
<td>Lactation BW loss (lbs)</td>
<td>69.6</td>
<td>73.6</td>
<td>76.7</td>
<td>4.56</td>
<td>NS</td>
</tr>
<tr>
<td>Lactation BW loss (%)</td>
<td>14.1</td>
<td>14.8</td>
<td>15.6</td>
<td>2.93</td>
<td>NS</td>
</tr>
<tr>
<td>Total lactation feed intake (lbs)</td>
<td>154.7</td>
<td>157.5</td>
<td>158.6</td>
<td>6.50</td>
<td>NS</td>
</tr>
<tr>
<td>Average daily feed intake (lbs)</td>
<td>9.3</td>
<td>9.5</td>
<td>9.6</td>
<td>0.39</td>
<td>NS</td>
</tr>
</tbody>
</table>

¹ NS indicates non-significant differences.
Results – Study #1

Effect of Lactation Feeding Curve on Sow and Litter Performance

- Treatment 1: Scaled early feeding program according to unit protocol.
- Treatment 2: Sows fed four times per day to appetite.
- Treatment 3: Sows fed according to a gradually increasing but restricted curve for the first ten days of lactation and then fed to appetite for the remainder of the trial.
Results – Study #2
Sow average daily feed intake

Conclusions

- Scientific evidence does not strongly support one lactation feeding strategy over another
- Evidence does suggest the need to maximizing lactation feed intake to reduce negative energy balance in later lactation
- Circumstantial evidence suggest early feeding strategy is critical to later feed intake in commercial practice
Practical Realities of Over-Feeding In Early Lactation

- Limit sow’s voluntary feed intake in later lactation when needs are greatest
- Predisposes to MMA

Optimized lactation feeding curve

- Limited feed intake prior to farrowing
- Gradual increase in feed intake over first 5 days to match feed intake, milk output and milk consumption
Berry (Intak) Sow Self Feeder

Results - use of self feeder

<table>
<thead>
<tr>
<th>Item</th>
<th>Hand fed</th>
<th>Self feeder</th>
<th>SEM</th>
<th>Sig.¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total lactation feed intake (lbs)</td>
<td>154.0</td>
<td>164.5</td>
<td>4.10</td>
<td>N</td>
</tr>
<tr>
<td>Average daily feed intake (lbs)</td>
<td>9.0</td>
<td>9.7</td>
<td>0.24</td>
<td>Y</td>
</tr>
</tbody>
</table>

¹Significance level
Sow feeding

- Gestation management drives farrowing performance
  - Sow body condition adjustment is critical!
  - More is not better!
  - Get a system, get it in place and “trust but verify”

Body Condition Management

- Body condition changes (metabolic state) influence the productivity of sows
  - Body condition management is included in one of the eight factors for achieving a 90% farrowing rate¹.

- Animal welfare implications
- Sow retention in the herd
  - Voluntary vs. involuntary culling
- Improve feed efficiency
Body Condition can be managed systematically!

Have to have buy-in to be successful
- No quick fixes
- “Set it and forget it”

But…
- What are the challenges for success?

Why aren’t we optimizing body condition today?

- Lack of system-wide protocols for managing sow body condition
- Body condition management is not always a high priority.
- There is a lack of basic understanding of the sows nutritional needs
- There is a lack of objective body condition data
EXAMPLE - Gestation Feeding Schedule

First 5 days (minimum) post mating – 2.25 pounds 2X/day regardless of parity and condition

Adjustment by Body Condition – week post mating, 30 and 60 days bred

<table>
<thead>
<tr>
<th>Body Condition</th>
<th>P0</th>
<th>P1</th>
<th>P2-5</th>
<th>P ≥ 6</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10</td>
<td>+10</td>
<td>+10</td>
<td>+10</td>
</tr>
<tr>
<td></td>
<td>7.75</td>
<td>8.5</td>
<td>9.25</td>
<td>10</td>
</tr>
<tr>
<td>90 Days Bred:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BCS≤3</td>
<td>Add 1.5 pounds to feeder setting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BCS≥3.5</td>
<td>No adjustment needed</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Is 6 pounds really 6 pounds?

- Weigh gestation feedboxes!
- Correlate box setting to actual pounds delivered

<table>
<thead>
<tr>
<th>Feed Box Setting</th>
<th>Actual Pounds Delivered</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>3.4</td>
</tr>
<tr>
<td>4</td>
<td>4.3</td>
</tr>
<tr>
<td>5</td>
<td>5.0</td>
</tr>
<tr>
<td>6</td>
<td>5.9</td>
</tr>
<tr>
<td>7</td>
<td>6.7</td>
</tr>
<tr>
<td>8</td>
<td>7.6</td>
</tr>
<tr>
<td>9</td>
<td>8.5</td>
</tr>
</tbody>
</table>

Difference of 0.3 lbs

Difference of 1.3 lbs

TAKE HOME:
Precise feeding requires that each type of feeder be weighed at all possible feeding levels to insure that the correct amount of feed is delivered.
TMI Body Condition System

- SCORE AND RECORD all sow’s BCS at:
  - Weaning, 30 days, 60 days and Farrowing
  - Weigh feed boxes and develop STANDARD FEEDING CHART for each farm
  - Adjust feeders ACCORDING TO PARITY AND BCS at day:
    - 7, 30 and 60 of gestation
- Monthly Audits of Farm Progress (TMI Staff)
  - Score sows at the key intervals
  - Track BCS loss though lactation (BCS entry vs. exit)

EXAMPLE - Gestation Feeding Schedule

First 5 days (minimum) post mating – 2.25 pounds 2X/day regardless of parity and condition

Adjustment by Body Condition – week post mating, 30 and 60 days bred:

<table>
<thead>
<tr>
<th>Parity</th>
<th>BCS</th>
<th>Adjust</th>
<th>Feeder Setting</th>
<th>Feeder Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>P0</td>
<td>10</td>
<td>7.75</td>
<td>5</td>
<td>4.75</td>
</tr>
<tr>
<td>P1</td>
<td>+10</td>
<td>8.5</td>
<td>5.75</td>
<td>5.5</td>
</tr>
<tr>
<td>P2-5</td>
<td>+10</td>
<td>9.25</td>
<td>6.75</td>
<td>6.25</td>
</tr>
<tr>
<td>P ≥ 6</td>
<td>+10</td>
<td>10</td>
<td>7.25</td>
<td>7</td>
</tr>
</tbody>
</table>

90 Days Bred:  
- BCS<3: **Add 1.5 pounds** to feeder setting
- BCS≥3.5: No adjustment needed
Does it work???

**TAKE HOME:**
Body Condition can be **SYSTEMATICALLY** managed though routine tracking of BCS and utilizing that information along with sow parity to determine the amount of feed to deliver daily.

Sampling Period
BCS1 = Weaning, BCS2 = 30 days, BCS3 = 60 days of gestation

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**Optimizing Long Term Productivity of Sow Farms**

- Retention of young sows
- Optimize lactation length
Keeping them in the herd

- BODY CONDITION management to minimize involuntary culling
  - Optimize lactation feed intake – INTAK feeders
- Implement gilt management plans
  - Estrus stimulation, Culling with no heat at 30 days, Minimize use of PG600
- Food, WATER and a DRY PLACE to sleep
  - Daily water availability
  - Physical facility management
Optimization of Lactation Length

- Part of long term strategy to increase system robustness
- Minimum weaning age of 21 days
  - Increased TB in subsequent litters – 0.1 pigs per day increased LL
  - Retention of P1 sows
  - Performance of Pigs in WTF system

Letting the sow do the work

- Warming pigs after birth
- Split milkings with survivability boxes
- Limited fostering
Warming pigs after birth

- Pigs can be come chilled, starve and die all in the same day
- Getting pigs warmed gives them a head start

When pigs are born they have a temperature of 102F. After farrowing, this temp can drop 4 degrees. It can take 4 days to get back to normal.
Management tips

- Survivability boxes
- Towels

Split Suckling

- Technique which can reduce variation and decrease the amount of pigs in the less viable category
- Separate the larger pigs within 12 hours after birth.
  - Little pigs can suckle for 1-2 hours without competition.
Benefits

- Reduces variation
  - 55% reduction in pigs weighing less than 8 lbs at weaning
- Gives smaller pigs a chance to get colostrum

Management tips

- Greatest economic benefit from litter sizes >9
- Separate pigs off for no more than 2 hours
  - prevent low blood sugar
Limiting fostering techniques

- Valuable tool!!! - THIS IS THE TICKET
- Goal is to keep as many pigs on the birth sow as possible

Continuous crossfostering can depress growth rate by 20% and reduce variation by 40% yielding a “highly uniform group of small pigs (Straw 1998.”
Management tips

- Limit cross fostering to the first 12 hours
- Prior to farrowing, count the number of functional teats on each sow
- At birth place number of pigs on sow equal to teats by removing all pigs from some sows
- Use the “empty sows” for fallback pigs
- DO NOT replace pigs on litters!

Bump Weaning Tips

- JUST SAY NO to bump weaning!!
- Use weaned sows if late nurse sows are needed; they can handle 5 day old pigs
How do we get it done?

- Nothing new here
- Daily priorities and organization
- The little things

What have we talked about?

- If we want to be competitive in a world market, highly efficient farms are necessary
- High PSY = High Born Alive = change in management
- Management = BLOCK AND TACKLE
  - Sow body condition
  - Lactation feeding
  - Get pigs warm
  - Don’t move pigs
Thank you

Questions?